other social circles the type may appear thus. "There is a lady medium in Omaha who is the wife of a prominent citizen. She is afflicted, being nearly blind. This lady, in her seances, produces large quantities of cut flowers, which she claims to materialize from their 'astral forms.' Most persons would think that a lady of her standing, and afflicted in the manner she is, would not deceive." The flowers are real flowers, and the medium allows ladies to examine her clothing to see that no flowers are concealed about her person. Yet no one pays attention to a confederate under whose ample skirts the "astral" flowers take shelter until needed, nor is the public aware of regular consignments of flowers to the medium from "a greenhouse in Council Bluffs." As to the psychology of the sitters, it is doubtless complex and divisible into many types. In the main it is not the performance that convinces against protest and despite intellectual antagonism; but rather that prepossession finds support in seeming mystery and flies to evils that it knows not of. The most common trait is the assurance that in the case observed there really was no room for trickery or malobservation. Why such assurance should be so common a trait it is not easy to explain. One wishes for such persons the attitude attributed (possibly without due warrant) to Sir Walter Scott: when asked whether he believed in ghosts, he is said to have replied, "No! I have seen too many of them."

J. J.

A UNIQUE COLLECTION OF PERIDOTITE

State Mineralogist J. F. Whitlack, of Little Rock, Ark., has recently arranged and placed on exhibition at the Bureau of Mines, Manufactures and Agriculture, a unique collection of peridotite which is attracting much attention.

The collection contains specimens of the peculiar peridotite breccia from the three well-known American localities, those of Arkansas, Kentucky and New York, arranged side by side with similar rock and concentrates from the most noted of the African mines, indicating more forcibly than could a lengthy description the extremely close resemblance between the rocks of these widely separated localities. So close is the resemblance between the peridotites from these various localities, as shown by the specimens both rough and polished, that it is almost impossible to distinguish between them.

The rock is a dark green, almost black, porphyritic mass composed largely of grains and crystals of olivene. The tendency of this mineral to alteration is well known, and specimens of the alteration products—the green and yellow serpentinous earths from the various localities—are also shown. These earthy products are interesting economically as well as scientifically, for it is by washing and screening them that the heavy concentrates are obtained from which the diamond and other gems are subsequently sorted. The collection thus shows the various stages through which the rock passes from practically the fresh unweathered condition through the partly altered peridotites into the softer green and yellow earths to the concentrate of pebbles and gems. Besides the much prized diamond the latter includes the light green olivene, bright red garnet and deep blue diopside crystals. The last named has not as yet been recognized in the Arkansas deposits.

To the scientist the problem of explaining how these gems come to be locked up in this peculiar volcanic material is of greater interest than the question of securing them, and it is hoped that a study of the conditions at some of these localities may explain the perplexing problem. At several of the occurrences the diamondiferous peridotite penetrates beds of shales rich in carbon, hence it has been suggested that the diamond, which is merely crystallized carbon, owes its presence to the fact that the heated material forced its way as a partially liquid mass through the adjoining carbon-bearing shales, absorbing some of their carbon which later crystallized from the cooling magma as the diamond. This plausible hypothesis would no doubt still be regarded as the true explanation were it not for the fact that at several of the diamond mines no carbon shales are known, hence the diamond could not have been derived from

this source. At present opinion is divided as to whether the diamond should be considered a constituent of the rock itself as is the mica, garnet, ilmenite, etc., or whether it has crystallized at great depths and merely been brought upward by the peridotite.

The discovery of diamonds at one of the American peridotite localities is causing some speculation as to whether the other two localities where this rock is known to occur and to contain the accessory minerals which so frequently accompany that gem, may not also contain the diamond. The remarkable similarity of the rocks at all three of the American localities with those of South Africa, not only in appearance as indicated in the collection mentioned, but also in eruptive character, in inclusions, in structure and in chemical composition, as has been frequently noted, makes such a supposition not improbable.

A catalogue describing the rocks of this collection in detail, together with a bulletin outlining the important facts concerning the Arkansas diamond field has been issued by Commissioner Guy B. Tucker, of the Bureau of Mines, Manufactures and Agriculture. Either of these may be obtained by applying to the Commissioner of Mines, Little Rock, Arkansas.

PHILIP F. SCHNEIDER

LITTLE ROCK, ARK.

SPECIAL ARTICLES

THE EFFECT OF AN ANGLE IN A CONDUCTOR ON SPARK DISCHARGE

AT a recent meeting of the American Philosophical Society held in Philadelphia the writer gave the preliminary results of his experimental work to determine the direction of flow of the electrical current in a wire. A large, eight-plate "static" machine, enclosed in a glass case containing also the Leyden jars, was used as a source of electricity.

The positive and negative discharges are led to two large metal cylinders hung in the air on insulators, and armed with a multitude of pin-points. In this way the positive and negative discharges are not superposed in the same conductor. The discharge was led around a sharply made right angle in the wire. This was done by means of a small splinter of bamboo, forming a sharp edge. A photographic plate in a holder of hard rubber was placed under the angle so that the discharge could be sent downward to the angle and then led horizontally away over the plate holder.

By reversing distant connections made by two small wires, the discharge could also be sent around the angle in the opposite direction.

The plate holder rests on a large sheet of plate glass forming a table top. Below this sheet of glass is a plate of metal connected to the water pipe. Its distance from the photographic plate may be varied. In all of the work done on the negative discharge this plate was not needed. Its use does not change the nature of the result.

It is found that when the negative discharge plunges down to the angle the electrical particles pass on into the air and through the rubber cover, whose thickness is three sixteenths of an inch, to the photographic film. This is shown by the character of the image formed on developing the plate. If the action is too strong, the electrical stresses produce branching images due to incipient breaking down of the film. By diminishing the spark length or by removing the angle further from the film, the image becomes a round spot just under the wire carrying the downward discharge. This image is apparently of the same character as is produced by X-rays or radio-action.

When the discharge is reversed, so that the negative particles pass across the plate to the angle and then upwards, the spot is much feebler, or does not form at all. The result depends somewhat on the extent to which the discharge is an oscillatory one. Oscillations are to be prevented.

When the positive discharge is sent around the angle, no such effect is produced. This is the case even when the grounded plate is brought as near as is possible without inducing spark discharges over the plate-holder. In such cases, however, the plate may be fogged by negative action from below, and